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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,804	08/01/2003	Naoki Kubo	Q76384	1990

23373 7590 12/23/2003  
SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
WASHINGTON, DC 20037

EXAMINER
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WILLIAMS, ALEXANDER O

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/631,804

Applicant(s)

KUBO

Examiner

Alexander O Williams

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.

2a) ☐ This action is FINAL.

2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-17 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some \* c) ☒ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.

4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: \_\_\_\_\_.

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Serial Number: 10/631804 Attorney's Docket #: Q76384  
Filing Date: 8/1/2003; claimed foreign priority to 8/2/2002

Applicant: Kubo

Examiner: Alexander Williams

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 to 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Nakayama et al. (U.S. Patent # 6,208,023 B1).

1. Nakayama et al. (figures 1a to 5c) specifically figure 1b show an IC package comprising: an IC chip **11**; a substrate **12** including a conductive layer **15**; and a heat-radiating mechanism **12a** that is mounted on the substrate, disposed between the IC chip and the substrate, and dissipates heat of the IC chip, wherein terminals (**by 16b**) of the IC chip and the heat-radiating mechanism are electrically connected, and the heat-radiating mechanism and the conductive layer of the substrate are electrically connected.
2. The IC package of claim 1, Nakayama et al. show wherein the IC chip is fixed on the heat-radiating mechanism.
3. The IC package of claim 1, Nakayama et al. show wherein the IC chip and the heat-radiating mechanism are electrically connected by wire bonding.
4. The IC package of claim 1, Nakayama et al. show wherein the IC chip and the heat-radiating mechanism are electrically connected by a conductive material.
5. The IC package of claim 1, Nakayama et al. further including an insulating layer **17** between the heat-radiating mechanism and the conductive layer of the substrate, wherein the heat-radiating mechanism and the conductive layer of the substrate are electrically connected via connection members disposed in plural throughholes disposed in the insulating layer.
6. The IC package of claim 1, Nakayama et al. show wherein the terminals of the IC chip are ground terminals and the conductive layer is a ground layer.
7. The IC package of claim 1, Nakayama et al. show wherein the terminals of the IC chip are power terminals and the conductive layer is a power layer.
8. The IC package of claim 1, Nakayama et al. show wherein the heat-radiating mechanism comprises a heat sink.
9. The IC package of claim 1, Nakayama et al. show wherein the heat-radiating mechanism comprises plural heat sinks, and at least part of each heat sink is disposed below the IC chip.
10. The IC package of claim 9, Nakayama et al. show wherein the plural heat sinks are disposed so as to be separate from each other.

11. Nakayama et al. (figures 1a to 5c) specifically figure 1b show a connection structure comprising: an IC chip **11**; a substrate **12** disposed with a conductive layer **15**; and a heat-radiating mechanism **12a** that is mounted on the substrate, disposed between the IC chip and the substrate, and dissipates heat of the IC chip, wherein terminals of the IC chip are electrically connected to the conductive layer via the heat-radiating mechanism.
12. The connection structure of claim 11, Nakayama et al. show wherein the IC chip and the heat-radiating mechanism are electrically connected by wire bonding.
13. The connection structure of claim 11, Nakayama et al. show wherein the IC chip and the heat-radiating mechanism are electrically connected by a conductive material.
14. The connection structure of claim 11, Nakayama et al. further including an insulating layer **17** between the heat-radiating mechanism and the conductive layer of the substrate, wherein the heat-radiating mechanism and the conductive layer of the substrate are electrically connected via connection members disposed in plural throughholes disposed in the insulating layer.
15. Nakayama et al. (figures 1a to 5c) specifically figure 1b show a method of connecting an IC chip **11** and a substrate **12** including a conductive layer **15** sandwiched between insulating layers **17**, the method comprising the steps of:
  - (a) disposing a heat-radiating mechanism **12a** between the IC chip and the substrate;
  - (b) fixing the IC chip to the heat-radiating mechanism;
  - (c) disposing plural through-holes in at least one of the insulating layers; and
  - (d) disposing connection members in the through-holes so that the heat-radiating mechanism and the conductive layer of the substrate are electrically connected via the connection members.
16. Nakayama et al. (figures 1a to 5c) specifically figure 1b show an electrical device disposed with an IC package that includes: an IC chip **11**; a substrate **12** including a conductive layer **15**; and a heat-radiating mechanism **12a** that is mounted on the substrate, disposed between the IC chip and the substrate, and dissipates heat of the IC chip, wherein terminals of the IC chip and the heat radiating mechanism are electrically connected, and the heat-radiating mechanism and the conductive layer of the substrate are electrically connected.
17. Nakayama et al. (figures 1a to 5c) specifically figure 1b show an electrical device disposed with a connection structure that includes: an IC chip **11**; a substrate **12** disposed with a conductive layer **15**; and a heat-radiating mechanism **12a** that is mounted on the substrate, disposed between the IC chip and the substrate, and

dissipates heat of the IC chip, wherein terminals of the IC chip are electrically connected to the conductive layer via the heat-radiating mechanism.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/684,796,666,698,696,675,784,786,692,693,691,712, 713,717,720	12/12/03
Other Documentation: foreign patents and literature in 257/684,796,666,698,696,675,784,786,692,693,691,712, 713,717,720	12/12/03
Electronic data base(s): U.S. Patents EAST	12/12/03

***Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to Technology Center 2800 via the Technology Center 2800 Fax center located in Crystal Plaza 4-5B15. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center 2800 Fax Center number is (703) 308-7722 or 24. Only Papers related to Technology Center 2800 APPLICATIONS SHOULD BE FAXED to the GROUP 2800 FAX CENTER.***

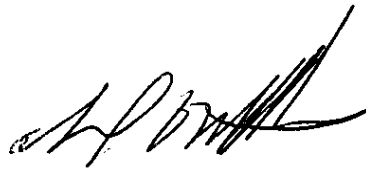
Any inquiry concerning this communication or any earlier communication from the examiner should be directed to ***Examiner Alexander Williams*** whose telephone number is ***(703) 308-4863***.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center 2800 receptionist** whose telephone number is **(703) 308-0956**.

12/13/03

A handwritten signature in black ink, appearing to read 'A. Williams', with a stylized flourish at the end.

Primary Patent Examiner  
Alexander O. Williams